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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/742,322	12/19/2003	Jonas Ekmark	81070794 (202-0963)	5774

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FORD GLOBAL TECHNOLOGIES, LLC.
SUITE 600 - PARKLANE TOWERS EAST
ONE PARKLANE BLVD.
DEARBORN, MI 48126

EXAMINER	
GIBSON, ERIC M	
ART UNIT	**PAPER NUMBER**
3661	

DATE MAILED: 01/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/742,322	EKMARK ET AL.	
	Examiner	Art Unit	
	Eric M. Gibson	3661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 December 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *2/17/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claim1-6 are objected to because of the following informalities:

In claim 1, at line 8, "be" between "is" and "felt" should be deleted.

Claims 2-6 are necessarily objected as being dependent upon an objected base claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 3-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Byers et al. (US20020107621A1).

Per claim 1, Byers teaches a method of controlling a steering assembly of a vehicle including analyzing a current vehicle driving-scenario as indicated by signals from a plurality of sensors (24, 26, 28; figure 3), determining a desired steering wheel resist torque that should be felt by a driver of the vehicle (120, figure 3), sensing an actual steering wheel resist torque that is felt by the driver (36, figure 3), comparing the actual steering wheel resist torque with the desired torque (page 3, [0024]), calculating a steering assist force which is required to be applied to the steering assembly in order to make the actual steering wheel resist torque substantially equal to the desired

steering wheel resist torque (page 3, [0024]), and activating a motor to apply the steering assist force to the steering assembly (page 3, [0024]).

Per claim 3, Byers teaches applying an inverse model filter function (see figure 2).

Per claim 4, Byers teaches calculating a preliminary assist force and an adjustment to the force (page 2, [0021]).

Per claim 5, Byers teaches that the filter can allow disturbances to be minimized, if desired (page 2, [0020]).

Per claim 6, Byers teaches activating a motor to apply the steering assist force to the steering assembly (page 3, [0024]).

Per claim 7, Byers teaches a control system for a steering assembly of a vehicle including a plurality of sensors (24, 26, 28; figure 3), a generator for receiving the sensor signals and calculating a desired steering wheel resist torque that should be felt by a driver of the vehicle (120, figure 3), a torque estimator sensing an actual steering wheel resist torque that is felt by the driver (31, figure 3), a comparator for calculating a difference between the actual steering wheel resist torque with the desired torque (page 3, [0024]), at least one controller calculating a steering assist force which is required to be applied to the steering assembly in order to make the actual steering wheel resist torque substantially equal to the desired steering wheel resist torque (page 3, [0024]), and a motor to apply the steering assist force to the steering assembly (page 3, [0024]).

Per claim 8, Byers teaches applying an inverse model filter function (see figure 2).

Per claims 9 and 12, Byers teaches both feedback control (36, figure 1a) and feedforward control (input from the road wheel system 16, figure 1a).

Per claim 10, Byers teaches calculating a preliminary assist force and an adjustment to the force (page 2, [0021]).

Per claim 11, Byers teaches that the filter can allow disturbances to be minimized, if desired (page 2, [0020]).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Byers in view of Yamamoto et al. (US006018691A).

Per claim 2, Byers teaches receiving signals of a vehicle speed (28, figure 3) and a steering wheel rotation angle (20, figure 3), but not a third signal from the recited group. There are many other relevant signals that a control system can monitor and use in a control system for vehicle steering. One such parameter is vehicle yaw rate. Systems known to one of ordinary skill in the art at the time of the invention measure and take yaw rate into account in steering reaction control systems, see for example Figure 2 of Yamamoto. It would have been obvious to one of ordinary skill in the art, at the time of invention, to take into account another parameter that is known to be relevant in the art of steering control systems, as exemplified by the teaching of Yamamoto.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Millsap et al. (US20020103589A1) teaches a tactile feedback control for steer-by-wire systems. Demerly et al. (US006687588B2) teaches compensation using position for improved feel and stability in a steering system. Bolourchi (US006625530B1) teaches a feed forward – feed back control for steer-by-wire systems. Discenzo (US006097286A) teaches a steer by wire system with feedback. Nishizaki et al. (US006079513A) teaches a steering apparatus for a vehicle. Higashira et al. (US005908457A) teaches an automobile steering system including reaction feedback to operator. Sherwin et al. (US005709281A) teaches a method and apparatus for adjusting steering feel. Serizawa et al. (US005347458A) teaches a

vehicle steering control system. Ito et al. (US004830127A) teaches a system and method for controlling a steering reaction force imposed on a steering wheel.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric M. Gibson whose telephone number is (571) 272-6960. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Black can be reached on (571) 272-6956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

EMG

THOMAS G. BLACK
SUPERVISORY PATENT EXAMINER
GROUP 3600